

10/582 321

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2004/004419A. CLASSIFICATION OF SUBJECT MATTER
IPC(7): C12N 15/82, A01H 5/00, A01H 3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(7): C12N 15/82, A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Delphion, Pubmed, Agricola, Canadian Patent Database. Keywords: nonsymbiotic, plant, hemoglobin, root, phenotype, hormone

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HUNT, PW ET AL. "Increased level of hemoglobin 1 enhances survival of hypoxic stress and promotes early growth in <i>Arabidopsis thaliana</i> ." PROC. NATL. ACAD. SCI. USA 24.12.2002 vol. 99 no. 26: 17197-17202 see p. 17200, Tables 4 and 6 cited in application	1, 2, 7, 9, 16, 18, 19
X	US6372961 B1 PIONEER HI-BRED INTERNATIONAL, INC. (Tarczynski, MC and Shen, B) 16.04.2002 see whole document	1, 4, 7, 9, 16, 18, 19

[x] Further documents are listed in the continuation of Box C. [x] See patent family annex.

• Special categories of cited documents :	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search	Date of mailing of the international search report
9 June 2005 (09-06-2005)	13 July 2005 (13-07-2005)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer Robert Rymerson (819) 956-9972

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PCT/IB2004/004419

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant	Relevant to claim No.
X	WO 98/12913 A1 BAILEY JE AND BULOW L 02.04.1998 see whole document	1, 2, 4, 7, 9, 16, 18, 19
P,X	WO 2004/087755 A2 CROPDESIGN N.V. (Mulet Salort, JM et al.) 14.10.2004 see whole document	
P,A	IGAMBERDIEV, AU ET AL. "NADH-dependent metabolism of nitric oxide in alfalfa root cultures expressing barley hemoglobin." PLANTA May 2004 vol. 219: 95-102	
A	WO 00/00597 A2 UNIVERSITY OF MANITOBA (Guy, P et al.) 06.01.2000	
A	HOLMBERG, N ET AL. "Transgenic tobacco expressing Vitreoscilla hemoglobin exhibits enhanced growth and altered metabolite production." NATURE BIOTECHNOLOGY 1997 vol. 15: 244-247 see whole document cited in application	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/IB2004/004419

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US6372961	16-04-2002	US6372961 B1	16-04-2002
WO9812913	02-04-1998	AU730663 B2 AU4502297 A BR9711558 A CA2266626 A1 EP0955804 A1 HU9904237 A2 JP2001501098T T US5959187 A WO9812913 A1	08-03-2001 17-04-1998 18-01-2000 02-04-1998 17-11-1999 28-04-2000 30-01-2001 28-09-1999 02-04-1998
WO2004087755	14-10-2004	WO2004087755 A2	14-10-2004
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